

GLOSSARY

Abandonment—Termination of fluid minerals operations, production operations, removal of facilities, plugging of the well bore, and reclamation of surface disturbances.

Affected Environment—Surface or subsurface resources (including social and economic elements) within or adjacent to a geographic area that potentially could be affected by gas development and production activities. The environment of the area to be affected or created by the alternatives under consideration (40 CFR 1502.15).

A-weighted—A weighting function applied to the noise spectrum, which approximates the response of the human ear.

Allotment (range)—A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed under management of an authorized agency.

Alternative—A combination of management prescriptions applied in specific amounts and locations to achieve a desired management emphasis as expressed in goals and objectives. One of a number of plans or projects proposed for decision-making.

Ambient (air)—The surrounding atmospheric conditions to which the general public has access.

Animal Unit Months (AUM)—Amount of forage required to sustain a cow/calf unit (one cow and one calf) for one month.

Application for Permit to Drill (APD)—A written request, petition, or offer to lease lands for the purpose of fluid minerals exploration and/or right-of-extraction.

Aquifer—A water-bearing layer of permeable rock, sand or gravel. A formation, group of formations, or part of a formation that contains sufficient saturated permeable material to conduct groundwater and yield large quantities of water to wells and springs.

Area of Critical Environmental Concern (ACEC)—A BLM designation pertaining to areas where specific management attention is needed to protect and prevent irreparable damage to important historical, cultural, and scenic values, fish or wildlife resources, or other natural systems or processes, or to protect human life and safety from natural hazards.

Arroyo—A term applied in the arid and semiarid regions of the southwestern United States to the small, deep, flat-floored channel or gully of an ephemeral stream or of an intermittent stream usually with vertical or steeply cut banks of unconsolidated material at least 2 feet (60 centimeters) high; it is usually dry, but may be transformed into a temporary watercourse or short-lived torrent after heavy rainfall.

Aspect—The direction in which a slope faces.

Basin—See **San Juan Basin**.

Bentonite—A naturally occurring clay used to keep the cuttings in suspension as they move up the borehole.

Best Management Practices (BMPs)—Measures that are installed on the land to reduce erosion and sedimentation before starting and during ground-disturbing activities.

Big Game—Large species of wildlife that are hunted, such as elk, deer, bighorn sheep, and pronghorn antelope.

Biodiversity—The diversity of living organisms considered at all levels of organization including genetics, species, and higher taxonomic levels, and the variety of habitats and ecosystems, as well as the processes occurring therein.

Cambrian—The oldest of the periods of the Paleozoic Era; also the system of strata deposited during that period.

Carbonaceous—Coaly; pertaining to, or composed largely of, carbon.

Casing—Steel pipes of varying diameter and weight, joined together by threads and couplings, "inserted" into the well bore for the purpose of supporting the walls of the well and preventing them from caving in. Surface casing is inserted from the ground surface to approximately 250 feet (76 metres), production casing is inserted to the total depth of the well (smaller diameter pipe than surface casing), cemented in place and latter perforated for production.

Clean Air Act—Federal legislation governing air pollution. The Clean Air Act established National Ambient Air Quality Standards for carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide, and lead.

Coal—A readily combustible rock containing more than 50 percent weight and more than 70 percent by volume of carbonaceous material including inherent moisture, formed from compaction and induration of variously altered plant remains similar to those in peat. Differences in the kinds of plant materials (type), in degree of metamorphism (rank), and in the range of impurity (grade) are characteristic of coal and are used in classification.

Coalbed Methane—A gas associated with a coal seam.

Completion—The activities and methods to prepare a well for production. Includes installation of equipment for production from an oil or gas well.

Compressor (large)—Range from 500 to 10,000 horsepower, located on oil and gas distribution pipelines.

Compressor (small) —About 100 horsepower, generally located at the wellhead.

Compressor Station—Any location along an oil and gas trunk line with one or more large compressors.

Conditions of Approval (COA)—Conditions or provisions (requirements) under which an Application for a Permit to Drill or a Sundry Notice is approved.

Controlled Surface Use (CSU)—A fluid minerals leasing constraint under which use and occupancy is allowed (unless restricted by another stipulation), but identified resource values require special operational limitations that may modify lease rights.

Corridor—For purposes of this environmental assessment, a wide strip of land within which a proposed linear facility could be located.

Council on Environmental Quality (CEQ)—An advisory council to the President of the United States established by the national Environmental Policy Act of 1969. It reviews federal programs for their effect on the environment, conducts environmental studies, and advises the president on environmental matters.

Critical Habitat—An area occupied by a threatened or endangered species “on which are found those physical and biological features (1) essential to the conservation of the species, and (2) which may require special management considerations or protection” (16 USC 1532 [5][A][I]1988). Unoccupied by suitable habitat for the threatened or endangered species is not automatically included unless such areas are essential for the conservation of the species (50 CFR 424.12(e)).

Cultural Resources—Remains of human activity, occupation, or endeavor, as reflected in districts, sites, buildings, objects, artifacts, ruins, works of art, architecture, and natural features important in human events.

Cumulative Impact—The impact on the environment that results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

Dewatering—The act of removing water.

Directional Drilling—The intentional deviation of a wellbore from vertical to reach subsurface areas off to one side from the drilling site.

Discretionary Closure—Those lands where the BLM has determined that fluid minerals leasing, even with the most restrictive stipulations, would not adequately protect other resources, values, or land uses.

Disposal Well—A well into which produced water from other wells is injected into an underground formation for disposal.

Diversity—The relative abundance of wildlife species, plant species, communities, habitats, or habitat features per unit of area.

Drilling Fluids—The circulating fluid used to bring cuttings out of the wellbore, cool the drill bit, provide hole stability, and pressure control.

Drilling Rig—The derrick, draw-works, and attendant surface equipment of a drilling or workover unit.

Drilling—The operation of boring a hole in the earth, usually for the purpose of finding and removing subsurface formation fluids such as oil and gas.

Dry Hole—Any well incapable of producing oil or gas in commercial quantities. A dry hole may produce water, gas, or even oil, but not enough to justify production.

Easement—A right afforded a person or agency to make limited use of another's real property for access or other purposes.

Emission—Effluent discharge into the atmosphere, usually specified by mass per unit time.

Endangered Species—Any animal or plant species in danger of extinction throughout all or a significant portion of its range.

Environmental Impact Statement (EIS)—A document prepared to analyze the impacts on the environment of a proposed action and released to the public for review and comment. An EIS must meet the requirements of NEPA, CEQ, and the directives of the agency responsible for the proposed action.

Erosion—The group of processes whereby earthy or rocky material is worn away by natural sources such as wind, water, or ice and removed from any part of the earth's surface.

Ephemeral Stream—A stream that flows only in direct response to precipitation.

Exploration Well—A well drilled in the area where there is no oil or gas production (also known as wildcat well).

Federal Candidate Species—Sensitive wildlife species currently under consideration for inclusion to the list of federal threatened or endangered species.

Federal Listed Species—Animal or plant species listed by the USFWS as threatened or endangered.

Floodplain—The flat ground along a stream that is covered by water when the stream overflows its banks at flood stages.

Fluid Minerals—In this case, oil, gas, and geothermal resources.

Forage—All browse and herbaceous foods available to grazing animals, which may be grazed or harvested for feeding.

Foreground View—The landscape area visible to an observer within a mile.

Formation—A body of rock identified by lithic characteristics and stratigraphic position; it is prevailing, but not necessarily tabular, and is mappable at the earth's surface or traceable in the subsurface (NACSN, 2984, Art. 24).

Fossil—Any remains, trace, or imprint of a plant or animal that has been preserved by natural processes in the earth's crust since some past geologic time.

Fractured—Fissured, broken, or cracked. See also Hydraulic Fracturing.

Fragmentation—See Habitat Fragmentation.

Fugitive Dust—Airborne particles emitted from any source other than through a stack or vent.

Habitat—A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Habitat Fragmentation—The disruption (by division) of extensive habitats into smaller habitat patches. The effects of habitat fragmentation include loss of habitat area and the creation of smaller, more isolated patches of remaining habitat.

Habitat Management Plan (HMP)—A written and officially approved plan for a specific geographical area of public land that identifies wildlife habitat and related objectives, establishes the sequence of actions for achieving objectives, and outlines procedures for evaluating accomplishments.

Habitat Type—An aggregation of all land areas potentially capable of producing similar plant communities at climax.

High Development Area—An area of approximately 7,000 square miles located in northwest New Mexico with a high level of oil and gas production, as delineated by the New Mexico Institute of Mining and Technology in the RFDS study for the San Juan Basin.

Historic—Archaeological and archivally known sites related to the activities of non-native peoples, whether they are of Euro-American, Afro-American or Asian-American origin, in the period after the European discovery of the New World (ca. A.D. 1492).

Hummocky—Like a hummock, full of hummocks (a low, rounded hill, knoll, hillock; a tract of wooded land higher than a nearby swamp or marsh).

Hydraulic Fracturing—A method of stimulating production by increasing the permeability of the producing formation.

Hydrocarbons—Organic compounds of hydrogen and carbon, whose densities, boiling points, and freezing points increase as their molecular weights increase. Although composed mostly of carbon and hydrogen, hydrocarbons exist in a great variety of compounds, owing to the strong affinity of the carbon atom for other atoms and itself. The smallest molecules are gaseous; the largest are solids. Petroleum is a mixture of many different hydrocarbons.

Impact—A modification of the existing environment caused by an action (such as construction or operation of facilities).

Increments—Maximum allowable increases over legally established baseline concentrations of pollutants covered by the Prevention of Significant Deterioration (PSD) provisions designated as Class I, II, and III areas.

Indirect Impacts—Secondary effects that occur in locations other than the initial action or later in time.

Infrastructure—The facilities, services, and equipment needed for a community to function including roads, sewers, water lines, police and fire protection, and schools.

Injection—The forcing, under abnormal pressure, of material (downward from above, upward from below, or laterally) into a pre-existing deposit or rock, either along some plane or weakness or into a pre-existing crack or fissure.

Injection Well—A well used to inject fluids into an underground formation to increase reservoir pressure.

Insignificant or Nonsignificant Impacts—Impacts that are perceptible or measurable relative to those occurring naturally or due to other actions, and would not exceed significance criteria.

Intermittent Stream—A stream or reach of a stream that is below the local water table for at least some part of the year.

Jurisdiction—The legal right to control or regulate use of land or a facility. Jurisdiction requires authority, but not necessarily ownership.

Landscape—An area composed of interacting ecosystems that are repeated because of geology, landform, soils, climate, biota, and human influences throughout the area. Landscapes are generally of a size, shape, and pattern that are determined by interacting ecosystems.

Landscape Character—Particular attributes, qualities, and traits of a landscape that give it an image and make it identifiable or unique.

Leasable Minerals—Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920. They include coal, phosphate, asphalt, sulphur, potassium, and sodium minerals, and oil, gas, and geothermal.

Lease—(1) A legal document that conveys to an operator the right to drill for oil and gas; (2) the tract of land, on which a lease has been obtained, where producing wells and production equipment are located.

Lease Notice—Provides more detailed information concerning limitations that already exist in law, lease terms, regulations, and operational orders. A Lease Notice also addresses special items the lessee would consider when planning operations, but does not impose new or additional restrictions.

Lease Stipulation—A modification of the terms and conditions on a standard lease form at the time of the lease sale.

Lithic Scatter—A scatter of chipped stone materials, which may include fragments, flakes, or stone tools.

Management Situation Analysis—Assessment of the current management direction. It includes a consolidation of existing data needed to analyze and resolve identified issues, a description of current BLM management guidance, and a discussion of existing problems and opportunities for solving them.

Middleground View—One of the distance zones of a landscape being viewed. This zone extends from the limit of the foreground to three to five miles from the observer.

Migration (oil and gas)—the movement of liquid and gaseous hydrocarbons from their source or generating beds, through permeable formations into reservoir rocks.

Mineral Estate (Mineral Rights) – The ownership of minerals, including rights necessary for access, exploration, development, mining, ore dressing, and transportation operations.

Mineral Reserves—Known mineral deposits that are recoverable under present conditions but are as yet undeveloped.

Mineral Rights—Mineral rights outstanding are third-party rights, an interest in minerals not owned by the person or party conveying the land to the United States. It is an exception in a deed that is the result of prior conveyance separating title of certain minerals from the surface estate.

Reserved mineral rights are the retention of ownership of all or part of the mineral rights by a person or party conveying land to the United States. Conditions for the exercising of these rights have been defined in the Secretary of the Interior's "Rules and Regulations to Govern Exercising of Mineral Rights Reserved Conveyance to the United States" attached to and made a part of deeds reserving mineral rights.

Mitigation—The abatement or reduction of an impact on the environment by (1) avoiding a certain action or parts of an action, (2) employing certain construction measures to limit the degree of impact, (3) restoring an area to preconstruction conditions, (4) preserving or maintaining an area throughout the life of a project, or (5) replacing or providing substitute resources to the environment or (6) gathering archaeological and paleontological data before disturbance.

Modification—A fundamental change in the provisions of a lease stipulation, either temporarily or for the term of the lease. A modification may, therefore, include an exemption from or alteration to a stipulated requirement. Depending on the specific modification, the stipulation may or may not apply to all other sites within the leasehold to which restrictive stipulation applies.

Multiple Use—Multiple use as defined by the Multiple Use—Sustained Yield Act 1960 means the management of all the various renewable surface resources so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.

National Ambient Air Quality Standards (NAAQS)—The allowable concentrations of air pollutants in the air specified by the federal government. The air quality standards are divided into primary standards (based on the air quality criteria and allowing an adequate margin of safety and requisite to protect the public health) and secondary standards (based on the air quality criteria and

allowing an adequate margin of safety and requisite to protect the public welfare) from any unknown or expected adverse effects of air pollutants.

National Environmental Policy Act of 1969 (NEPA)—An Act that encourages productive and enjoyable harmony between man and his environment and promotes efforts to prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches the understanding or the ecological systems and natural resources important to the Nation, and establishes the Council on Environmental Quality.

National Register of Historic Places (National Register, NRHP)—A listing of architectural, historical, archaeological, and cultural sites of local, state, or national significance. The list of sites was established by the Historic Preservation Act of 1966 and is maintained by the National Park Service.

Negligible Impact—Impact that is small in magnitude and importance and are difficult or impossible to quantify relative to those occurring naturally or due to other actions.

Nondiscretionary Closure—Those lands that must be closed to leasing for reasons beyond the discretion of the BLM. These are lands specially precluded from fluid minerals leasing by law, regulations, Secretarial or Executive Order, or that otherwise have been closed formally by decisions reached beyond the scope of the BLM.

No Surface Disturbance—In general, this applies to an area where an activity is allowed so long as it does not disturb the surface.

No Surface Occupancy (NSO)—A fluid minerals leasing constraint that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases restricted by this constraint through use of directional drilling from sites outside the NSO area.

Notice to Lessees (NTL)—A written notice issued by the BLM to implement regulations and operating orders, and serve as instructions on a specific item(s) of importance within a state, district, or area.

Noxious Weed—An undesirable weed species that can crowd out more desirable species.

Off-Highway Vehicle (OHV)—A vehicle (including four-wheel drive, trail bikes, all-terrain vehicles, and snowmobiles but excluding helicopters, fixed-wing aircraft, and boats) capable of traveling off road over land, water, ice, snow, sand, marshes, and other terrain.

Off-Highway Vehicle (OHV) Designations

- **Closed**—Applies to areas and trails where the use of OHVs is permanently or temporarily prohibited. Emergency use of vehicles is allowed.
- **Limited**—Applies to areas and trails where the use of OHVs is subject to restrictions such as limiting the number or types of vehicles allowed, dates and times of use (seasonal restrictions), limiting use to existing roads and trails, or limiting use to designated roads or trails. Under the designated roads and trails designation, use is allowed only on roads and

trails that are signed or designated for use. Combinations of restrictions, such as limiting use to certain types of vehicles during certain times of the year, are possible.

- **Open**—Applies to areas and trails where OHVs may be operated subject to operating regulations and vehicle standards set forth in BLM Manuals 8341 and 8343.

Operator—Any person who has taken formal responsibility for the operations conducted on the leased lands.

Paleontology—A science dealing with the life of past geological periods as known from fossil remains.

Particulate Matter—Particulate matter is regulated under the Clean Air Act. PM₁₀ is particulate matter that is 10 microns or less than in effective diameter (also called Fine Particulate Matter). PM_{2.5} is particulate matter that is 2.5 microns or less in effective diameter.

Patent—A grant made to an individual or group conveying fee simple title to public lands.

Perennial Stream—A stream receiving water from both surfaces and underground sources that flows throughout the entire year.

pH—A numeric value that gives the relative acidity or alkalinity of a substance on a 0 to 14 scale with the neutral point at 7. Values lower than 7 show the presence of acids, and values greater than 7 show the presence of alkalis.

Planning Area—Located in northwest New Mexico, encompasses an area of about eight million acres, including all of San Juan County, most of McKinley County, western Rio Arriba County, and northwestern Sandoval County.

Plan of Development—A mandatory plan, developed by an applicant of a mining operation or construction project, that specifies the techniques and measures to be used during construction and operation of all project facilities on public land. The plan is submitted for approval to the appropriate federal agency before any construction begins.

Plug—Any object or device that serves to block a hole or passageway, as a cement plug in a borehole.

Prehistoric—Archaeological sites resulting from the activities of aboriginal peoples native to this region, and because dating is often difficult, extending up to the reservation era (ca. A.D. 1868).

Prevention of Significant Deterioration (PSD)—A regulatory program based not on the absolute levels of pollution allowable in the atmosphere but on the amount by which a legally defined baseline condition will be allowed to deteriorate in a given area. Under this program, geographic areas are divided into three classes, each allowing different increases in nitrogen dioxide, particulate matter, and sulfur dioxide concentrations. Prevention of Significant Deterioration above legally established levels include the following:

- **Class I**—minimal additional deterioration in air quality (certain national parks and wilderness areas).
- **Class II**—moderate additional deterioration in air quality (most lands).

- **Class III**—greater deterioration for planned maximum growth (industrial areas).

Prime Farmland—Land that is best suited for producing food, feed, forage, fiber, and oilseed crops. The inventory of prime agricultural land is maintained by the USDA Natural Resources Conservation Service (formerly the Soil Conservation Service).

Production Well—A well drilled in a known field that produces oil or gas.

Proposed Action—Construction activities, alignments, and other activities proposed by the applicant.

Quaternary—The younger of the two geologic periods or systems in the Cenozoic Era.

Rangeland—Land used for grazing by livestock and big game animals on which vegetation is dominated by grasses, grass-like plants, forbs, or shrubs.

Raptor—Bird of prey with sharp talons and strongly curved beak; e.g., hawk, owl, vulture, eagle.

Rare or Sensitive Species—Species that have no specific legal protection under the Endangered Species Act as threatened or endangered species, but are of special concern to agencies and the professional biologic community due to low populations, limited distributions, ongoing population decline, and/or human or natural threats to their continued existence.

Reasonable Foreseeable Development Scenario (RFDS)—The prediction of the type and amount of oil and gas activity that would occur in a given area. The prediction is based on geologic factors, past history of drilling, projected demand for oil and gas, and industry interest.

Reclamation—The process of converting disturbed land to its former use or other productive uses.

Recreation and Public Purposes (R&PP) Act—This act authorizes the Secretary of the Interior to lease or convey public lands for recreational and public purposes (R&PP), under specified conditions, to states or their political subdivisions and to nonprofit corporations and associations.

Resource Management Plan (RMP)—A land use plan that establishes land use allocations, multiple-use guidelines, and management objectives for a given planning area. The RMP planning system has been used by the BLM since 1980.

Record of Decision—A document separate from, but associated with, an environmental impact statement that publicly and officially discloses the responsible official's decision on the proposed action.

Reserve Pit—(1) Usually an excavated pit that may be lined with plastic that holds drill cuttings and waste mud. (2) Term for the pit that holds the drilling mud.

Reservoir (oil and gas)—A naturally occurring, underground container of oil and gas, usually formed by deformation of strata and changes in porosity.

Riparian—Situated on or pertaining to the bank of a river, stream, or other body of water. Normally used to refer to the plants of all types that grow along, around, or in wet areas.

Riverine—A system of wetlands that includes all wetland and deep-water habitats contained within a channel that lacks trees, shrubs, persistent emergents, and emergent mosses or lichens.

Roads—Vehicle routes that are improved and maintained by mechanical means to ensure relatively regular and continuous use. (A way maintained strictly by the passage of vehicles does not constitute a road.)

Rotation—A technique performed while cementing, whereby casing is rotated in the hole in order to move the cement slurry uniformly around the casing to eliminate channeling and provide an effective cement bond on the casing and formation walls.

Salinity—A measure of the amount of dissolved salts in water.

San Juan Basin—A large geologic basin located in northwestern New Mexico and southwestern Colorado that has been extensively drilled for oil and gas and is reportedly the second largest gas-producing basin in the continental United States.

Scoping—A term used to identify the process for determining the scope of issues related to a proposed action and for identifying significant issues to be addressed in an EIS.

Sediment—Soil or mineral transported by moving water, wind, gravity, or glaciers, and deposited in streams or other bodies of water, or on land.

Sediment Yield—The amount of sediment produced in a watershed, expressed in tons, acre feet, or cubic yards, of sediment per unit of drainage area per year.

Sedimentary Rock—Rock resulting from consolidation of loose sediment that has accumulated in layers.

Sensitive Plant Species—Those plant or animal species susceptible or vulnerable to activity impacts or habitat alterations.

Significant—An effect that is analyzed in the context of the proposed action to determine the degree or magnitude of importance of the effect, either beneficial or adverse. The degree of significance can be related to other actions with individually insignificant but cumulatively significant impacts.

Significance Criteria—Criteria identified for specific resources used to determine whether or not impacts would be significant.

Slope—The degree of deviation of a surface from the horizontal.

Soil Horizon—A distinct layer of soil, approximately parallel to the land surface, and different from adjacent, genetically related layers in physical, chemical, and biological properties or characteristics.

Soil Productivity—The capacity of a soil to produce a plant or sequence of plants under a system of management.

Soil Series—A group of soils having genetic horizons (layers) that, except for texture of the surface layer, have similar characteristics and arrangement in profile.

Soil Texture—The relative proportions of sand, silt, and clay particles in a mass of soil. Basic textural classes, in order of increasing proportions of fine particles, are: sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, and clay.

Split Estate—Refers to land where the mineral rights and the surface rights are owned by different parties. Owners of the mineral rights generally have a superior right.

Standard Lease Terms and Conditions (STC)—Areas may be open to leasing with no specific management decisions defined in a Resource Management Plan; however, these areas are subject to lease terms and conditions as defined on the lease form (Form 3100-11, Offer to Lease and Lease for Oil and Gas; and Form 3200-24, Offer to Lease and Lease for Geothermal Resources).

Stipulations—Requirements that are part of the terms of a mineral lease. Some stipulations are standard on all federal leases. Other stipulations may be applied to the lease at the discretion of the surface management agency to protect valuable surface resources and uses.

Stratigraphy—The arrangement of strata, especially as to geographic position and chronological order of sequence.

Suitability—As used in the Wilderness Act and the Federal Land Policy and Management Act, refers to a recommendation by the Secretary of the Interior or the Secretary of Agriculture that certain federal lands satisfy the definition of wilderness in the Wilderness Act. These lands have been found appropriate for designation as wilderness on the basis of an analysis of their existing and potential uses.

Sundry Notice—Standard form to notify of or propose change of approved well operations subsequent to an Application for Permit to Drill in accordance with 43 CFR 3162.3-2.

Syncline—A fold of stratified rock inclining upward in opposite directions from both sides of its axis (opposed to anticline).

Tertiary—The older of the two geologic periods comprising the Cenozoic Era; also the system of strata deposited during that period.

Threatened or Endangered Species—Animal or plant species that are listed under the federal Endangered Species Act of 1973, as amended (federally listed), or under the Colorado or New Mexico Endangered Species Act (state listed).

Threatened Species—Any plant or animal species likely to become endangered within the foreseeable future throughout all or part of its range.

Timing Limitation (TL) (Seasonal Restriction)—A fluid minerals leasing constraint that prohibits surface use during specified time periods to protect identified resource values. The constraint does not apply to the operation and maintenance of production facilities unless analysis demonstrates that such constraints are needed and that less stringent, project-specific constraints would be insufficient.

Total Suspended Particulates (TSP)—All particulate matter less than 70 microns in effective diameter.

Valid Existing Rights—Legal interests that attach a land or mineral estate and cannot be divested from the estate until those interests expire or are relinquished.

Vandalism—Willful or malicious destruction or defacement of public property (e.g., cultural or paleontological resources).

Vegetation Manipulation—Planned alteration of vegetation communities through use of prescribed fire, plowing, herbicide spraying, or other means to gain desired changes in forage availability or wildlife cover.

Vegetation Type—A plant community with distinguishable characteristics described by the dominant vegetation present.

Viewshed—Total visible area from a single observation point, or total visible area from multiple observation points. Viewsheds are accumulated seen-areas from viewer locations. Examples are corridors, feature, or basin viewsheds.

Visual Resources—the visible physical features of a landscape (topography, water, vegetation, animals, structures, and other features) that constitute the scenery of an area.

Visual Resource Management (VRM)—The inventory and planning actions taken to identify visual resource values and to establish objectives for managing those values. Also, management actions taken to achieve the established objectives.

Visual Resource Management Classes—VRM classes identify the Visual Quality Objectives (VQOs) as the degree of acceptable visual change within a particular landscape. A classification is assigned to public lands based on guidelines established for scenic quality, visual sensitivity, and visibility.

- VRM Class I—This classification preserves the existing characteristic landscape and allows for natural ecological changes only. Includes Congressionally authorized areas (wilderness) and areas approved through an RMP where landscape modification activities should be restricted.
- VRM Class II—This classification retains the existing characteristic landscape. The level of change in any of the basic landscape elements (form, line, color, texture) due to management activities should be low and not evident.
- VRM Class III—This classification partially retains the existing characteristic landscape. The level of change in any of the basic landscape elements due to management activities may be moderate and evident.
- VRM Class IV—This classification applies to areas where the characteristic landscape has been so disturbed that rehabilitation is needed. Generally considered an interim short-term classification until rehabilitation or enhancement is completed.

Visual Sensitivity—Visual sensitivity levels are a measure of public concern for scenic quality and existing or proposed visual change.

Waiver—Permanent exemption from a lease stipulation. The stipulation no longer applies anywhere within the leasehold.

Wellbore—The hole made by the drilling bit.

Wellhead—The equipment used to maintain surface control of a well. It is formed of the casing head, tubing head, and ‘Christmas tree’. Also refers to various parameters as they exist at the wellhead, such as wellhead pressure, wellhead price of oil, etc.

Wetland—Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wilderness, Wilderness Area (WA)—An area formally designated by Congress as a part of the National Wilderness Preservation System. Qualities identified by Congress in the Wilderness Act of 1964, include: size; naturalness; outstanding opportunities for solitude or a primitive and unconfined type of recreation; and supplemental values such as geological, archaeological, historical, ecological, scenic, or other features.

Wilderness Study Area (WSA)—An area determined to have wilderness characteristics as described in section 603 of the Federal Land Policy and Management Act and Section 2C of the Wilderness Act of 1964 (78 Stat. 891). WSAs are subject to interdisciplinary analysis through the BLM’s land use planning system and public comment to determine their wilderness suitability. Suitable areas are recommended to the President and Congress for designation as wilderness.

Withdrawal—An action that restricts the use of public land and segregates it from the operation of some or all of the public land and mineral law. Withdrawals also are used to transfer jurisdiction of management of public lands to other federal agencies.

References

REFERENCES

- Ackerly 1998 Ackerly, Neal W. 1998. *A Navajo Diaspora: The Long Walk to Hwéeldi*. Dos Rios Consultants, Inc. Silver City, New Mexico.
- Ackerly 2002 Ackerly, Neal W. 2002. "Index of Acequias by County." Dos Rios Consultants, Inc. <http://www.dos-rios.com>. Silver City, New Mexico.
- Acrey 1994 Acrey, Bill P. 1994. *Navajo History: The Land and the People*. Department of Curriculum Materials Development, Central Consolidated School District Number 22. Shiprock, New Mexico.
- Ahlstrom et al. 1992 Ahlstrom, Richard V.N., Malcolm H. Adair, R. Thomas Euler, and Robert C. Euler, 1992. *Pothunting in Central Arizona: The Perry Mesa Archaeological Site Vandalism Study*. Cultural Resources Management Report Number 13. U.S. Department of Agriculture, Forest Service, Southwestern Region, and Bureau of Land Management. Arizona.
- Albee 1982 Albee, M.H. 1982. "Wildlife Resource Inventory of the Chaco Strippable Coal Area, New Mexico." PR-4-1: Final Report. BIO/WEST, Inc. Logan, Utah.
- Amsden 1993 Amsden, Charles W. 1993. *Across the Colorado Plateau: Anthropological Studies for the Transwestern Pipeline Expansion Project, III*. University of New Mexico, Office of Contract Archeology. Albuquerque, New Mexico.
- Anschuetz 1993 Anschuetz, Kurt F. 1993. "Rio del Oso Archaeological Survey, Espanola Ranger District, Santa Fe National Forest." University of Michigan, Museum of Anthropology. Ann Arbor, Michigan.
- Arnold et al. 2000 Arnold, J.G, J.R. Williams, R. Srinivasan, and K.W. King. 2000. *SWAT: Soil and Water Assessment Tool*. U.S. Department of Agriculture, Agricultural Research Service Grassland, Soil and Water Research Laboratory, with Texas A&M University, Texas Agricultural Experiment Station Blackland Research Center. College Station, Texas.
- Bailey 1988 Bailey, Lynn R. 1988. *The Long Walk: A History of the Navajo Wars, 1846-1868*. Westernlore Press. Tucson, Arizona.
- Bays 2001 Bays, David, El Paso Corporation. 2001. Personal communication with Chris Crabtree, SAIC. September.
- BEA 2000 U.S. Department of Commerce, Bureau of Economic Analysis. 2000. "Regional Economic Information System." <http://www.bea.doc.gov/bea/regional/reis/>. June.
- BLM 1984 Bureau of Land Management. 1984. *San Juan River Regional Coal Environmental Impact Statement*. Farmington Field Office. Farmington, New Mexico.
- BLM 1987a Bureau of Land Management. 1987. *Final Farmington Resource Area Management Situation Analysis*. Farmington Field Office. Farmington, New Mexico. March.

- BLM 1987b Bureau of Land Management. 1987. *Proposed Farmington Resource Management Plan and Final Environmental Impact Statement*. Farmington Field Office. Farmington, New Mexico. September.
- BLM 1988 Bureau of Land Management. 1988. *Farmington Resource Management Plan*. Farmington Resource Area. Farmington, New Mexico.
- BLM 1991a Bureau of Land Management. 1991. *Albuquerque District Proposed Resource Management Plan Amendment/Final Environmental Impact Statement: Oil & Gas Leasing and Development*. Albuquerque Field Office. Albuquerque, New Mexico. December.
- BLM 1991b Bureau of Land Management. 1991. "New Mexico Wilderness Study Report: Statewide Summary." Santa Fe, New Mexico. September.
- BLM 1992 Bureau of Land Management. 1992. "Bald Eagle ACEC Activity Plan." BLM Farmington Field Office. Farmington, New Mexico.
- BLM 1995a Bureau of Land Management. 1995. *Endangered, Threatened and Sensitive Plant Field Guide*. Farmington Field Office. Farmington, New Mexico.
- BLM 1995b Bureau of Land Management. 1995. *Farmington Proposed Resource Management Plan Amendment/Environmental Assessment Off-Highway Vehicle Use*. Farmington Field Office. Farmington, New Mexico. April.
- BLM 1995c Bureau of Land Management. 1995. *Interim Management Policy and Guidelines for Lands under Wilderness Review*. BLM Handbook H 8550-1, Release 8-67. Washington, D.C. July 5.
- BLM 1995d Bureau of Land Management. 1995. "Mexican Spotted Owl Survey Data for 1992 through 1995." Farmington Field Office. Farmington, New Mexico.
- BLM 1996 Bureau of Land Management. 1996. *Glade Run Trail System: Farmington Resource Management Plan Amendment and Recreation Area Management Plan*. Decision Record. Farmington Field Office. Farmington, New Mexico. May.
- BLM 1997 Bureau of Land Management. 1997. *Final Rattlesnake Canyon Habitat Management Plan*. Farmington Field Office. Farmington, New Mexico.
- BLM 1998a Bureau of Land Management. 1998. *Southwestern Willow Flycatcher Habitat Management Plan*. Farmington Field Office. Farmington, New Mexico.
- BLM 1998b Bureau of Land Management. 1998. *Cultural Resource Areas of Critical Environmental Concern: Proposed Resource Management Plan Amendment—Preliminary Finding of No Significant Impact*. Farmington Field Office. Farmington, New Mexico. April.
- BLM 1998c Bureau of Land Management. 1998. *Environmental Assessment on Proposed Coal Leasing: Proposed Amendment to the Farmington Field Office Resource Management Plan*. Farmington Field Office. Farmington, New Mexico.

- BLM 1999a Bureau of Land Management. 1999. "Coalbed Methane Development in the Northern San Juan Basin Of Colorado: A Brief History and Environmental Observations." Compiled by the Bureau of Land Management, San Juan Field Office. Durango, Colorado. December.
- BLM 1999b Bureau of Land Management. 1999. *Final Crow Mesa Habitat Management Plan*. Farmington Field Office. Farmington, New Mexico.
- BLM 2000a Bureau of Land Management. 2000. *New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management*. Santa Fe, New Mexico.
- BLM 2000b Bureau of Land Management. 2000. *Final Environmental Impact Statement for Riparian and Aquatic Habitat Management in the Farmington Field Office, New Mexico, Volumes 1 and 2: Proposed Riparian and Aquatic Habitat Management Plan*. Farmington Field Office. Farmington, New Mexico.
- BLM 2000c Bureau of Land Management. 2000. *Final Environmental Impact Statement for Riparian and Aquatic Habitat Management in the Albuquerque Field Office—New Mexico, Volumes 1 and 2*. BLM/NM/PL-00-010-1040, 2000. Albuquerque Field Office. Albuquerque, New Mexico. August.
- BLM 2000d Bureau of Land Management. 2000. *Draft Resource Management Plan Amendment/Environmental Impact Statement for Federal Fluid Minerals Leasing and Development in Sierra and Otero Counties*. Las Cruces Field Office. Las Cruces, New Mexico. October.
- BLM 2000e Bureau of Land Management, Bureau of Indian Affairs, and Southern Ute Indian Tribe (SUIT) Energy and Minerals Division. 2000. *Draft Environmental Impact Statement: Oil and Gas Development on the Southern Ute Indian Reservation*. October.
- BLM 2001a Bureau of Land Management. 2001. *Fire Management Plan*. Farmington Field Office. Farmington, New Mexico.
- BLM 2001b Bureau of Land Management. 2001. *Public Scoping Comments*. Unpublished report available from the Farmington Field Office. Farmington, New Mexico.
- BLM 2001c Bureau of Land Management. 2001. "BLM Payments in Lieu of Taxes: Summary by State and County, New Mexico, FY 1999, FY 2000." <http://www.blm.gov/pilt/index.htm>. Washington, D.C.
- BLM 2001d Bureau of Land Management. 2001. "BLM Payments in Lieu of Taxes: Entitlement Acreage by County and Agency." http://www.blm.gov/pilt/acr_result.php?searchtype=NM&searchterm=FY_2000. Washington, D.C.
- BLM 2002a Bureau of Land Management. 2002. "Duflot de Mofras' Description of Trade Expeditions on the Old Spanish Trail." http://www.moabutah.com/php/article_launchpad.php?article_id=14. Moab Field Office. Moab, Utah.

- BLM 2002b Bureau of Land Management. 2002. *Assessing the Potential for Renewable Energy on Federal Lands*. Unpublished draft report of the Department of Energy, National Renewable Energy Lab, and Bureau of Land Management. May.
- BLM 2002c Bureau of Land Management. 2002. *Final Biological Assessment: Impacts to Threatened and Endangered Species Related to the Resource Management Plan Revision*. Farmington Field Office. Farmington, New Mexico. September.
- Bradley and Brown 1998 Bradley, Ronna J. and Kenneth L. Brown. 1998. *Cultural Resources along the Mapco Four Corners Pipeline: Huerfano Station, New Mexico, to Hobbs Station, Texas*. University of New Mexico, Office of Contract Archeology. Albuquerque, New Mexico.
- Bromley 1985 Bromley, Mark. 1985. *Wildlife Management Implications of Petroleum Exploration and Development in Wildland Environments*. General Technical Report INT-199. U.S. Department of Agriculture, Forest Service, Intermountain Research Station. Ogden, Utah.
- Brown 2001 Brown, Dave, Environmental Specialist, BP America Incorporated. 2001. Personal communication with Chris Crabtree, SAIC. October.
- Cameron and Toll 2001 Cameron, Catherine M., and H. Wolcott Toll. 2001. "Deciphering the Organization of Production in Chaco Canyon." *American Antiquity*. Volume 66, Number 1.
- Caterpillar, Inc. 2001 Caterpillar, Inc. 2001. "Gas Petroleum Engine G3612 Specifications." http://www.caterpillar.com/products/engines_n_power_systems/spec_sheet_library/spec_sheet_library.html.
- City of Farmington 2000 City of Farmington. 2000. *Draft Comprehensive Plan*. Prepared by Wilbur Smith Associates. Columbia, South Carolina.
- Cole et al. 1997 Cole, E.K., M.D. Pope, R.G. Anthony. 1997. "Effects of Road Management on Movements and Survival of Roosevelt Elk." *Journal of Wildlife Management*. Volume 61, Number 4.
- Crampton and Madsen 1994 Crampton, C. Gregory, and Steven K. Madsen. 1994. *In Search of the Spanish Trail: Santa Fe to Los Angeles, 1829-1848*. Gibbs-Smith. Salt Lake City, Utah.
- Crawford 2000 Crawford, Dyvenna. 2000. *Under the Apple Tree: A Personal History of Apple Growing in San Juan County*. R.B. Design and Printing.
- Davis 1987 Davis, G.D. 1987. *Ecosystem Representation as a Criterion for World Wilderness Designation*. Wild Wings Foundation/Davis Associates. Wadhams, New York.
- Dick-Peddie 1993 Dick-Peddie, William A. 1993. *New Mexico Vegetation: Past, Present, and Future*. University of New Mexico Press. Albuquerque, New Mexico.
- Dyer et al. 2001 Dyer, S.J., J.P. O'Neill, S.M. Wasel, and S. Boutin. 2001. "Avoidance of Industrial Development by Woodland Caribou." *Journal of Wildlife Management*. Volume 65, Number 3.

- Earle 2001 Earle, Timothy. 2001. "Economic Support of Chaco Canyon." *American Antiquity*. Volume 66, Number 1.
- Eddy 1966 Eddy, Frank W. *Prehistory in the Navajo Reservoir District, Northwestern New Mexico*. Museum of New Mexico Papers in Anthropology 15. Santa Fe, New Mexico.
- Engler et al. 2001 Engler, Dr. Thomas W., Dr. Brian S. Brister, Dr. Her-Yuan Chen, Dr. Lawrence W. Teufel. 2001. *Oil and Gas Resource Development for San Juan Basin, New Mexico*. New Mexico Institute of Mining and Technology. Socorro, New Mexico.
- Feinman et al. 2000 Feinman, Gary M., Kent G. Lightfoot, and Steadman Upham. 2000. "Political Hierarchies and Organizational Strategies in the Puebloan Southwest." *American Antiquity*. Volume 65, Number 3.
- Ferris 1979 Ferris, C.R. 1979. "Effects of Interstate 95 on Breeding Birds in Northern Maine." *Journal of Wildlife Management*. Volume 43, Number 2.
- Forman 2000 Forman, R.T. 2000. "Estimate of the Area Affected Ecologically by the Road System in the United States." *Conservation Biology*. Volume 14, Number 1.
- Four Corners Journal 2000 "Oil and Gas Quarterly." 2000. *Four Corners Business Journal*. Farmington, New Mexico. November.
- Gannon 1997 Gannon, W.L. 1997. *Final Report: Bureau of Land Management, Farmington District*. Museum of Southwestern Biology, University of New Mexico. Albuquerque, New Mexico.
- Gannon 1998a Gannon, W.L. 1998. *1997 Bat Survey Final Report: Bureau of Land Management, Farmington District*. Museum of Southwestern Biology, University of New Mexico. Albuquerque, New Mexico.
- Gannon 1998b Gannon, W.L. 1998. *Final Report: Carson National Forest, Jicarilla Ranger District*. Report No. MSBB 98-31. Museum of Southwestern Biology. University of New Mexico. Albuquerque, New Mexico.
- Gantner 2001 Gantner, Bruce, Division Manager, Burlington Resources. 2001. Personal communication with Chris Crabtree, SAIC. October.
- Gibbs 1998 Gibbs, J.P. 1998. "Amphibian Movements in Response to Forest Edges, Roads, and Streambanks in Southern New England." *Journal of Wildlife Management*. Volume 62, Number 2.
- Grebinger 1973 Grebinger, Paul. 1973. "Prehistoric Social Organization in Chaco Canyon, New Mexico: An Alternative Reconstruction." *The Kiva*. Volume 39, Number 1.
- Hanson 2001 Hanson, John. Wildlife Biologist, Bureau of Land Management, Farmington Field Office, Farmington, New Mexico. 2001. Personal communication with Chuck Burt, SAIC. September 13.
- Hanson 2002 Hanson, John. Wildlife Biologist, Bureau of Land Management, Farmington Field Office, Farmington, New Mexico. 2002. Personal communication with Ellen Dietrich, SAIC. April.

- Hawks Aloft 1998 Hawks Aloft. 1998. "Nest Site Selection, Reproductive Success, and Territory Reoccupation of Ferruginous Hawks in Three Regions of New Mexico. Hawks Aloft, Inc. Albuquerque, New Mexico.
- Hawks Aloft 1999a Hawks Aloft. 1999. "Nest Site Selection, Reproductive Success, and Territory Reoccupation of Ferruginous Hawks in Three Regions of New Mexico. Hawks Aloft, Inc. Albuquerque, New Mexico.
- Hawks Aloft 1999b Hawks Aloft. 1999. "Reproductive Success and Territory Reoccupation of Golden Eagles in the Farmington and Socorro BLM Districts." Hawks Aloft, Inc. Albuquerque, New Mexico. February.
- Hawks Aloft 1999c Hawks Aloft. 1999. "Reproductive Success and Territory Reoccupation of Golden Eagles in the Farmington and Socorro BLM Districts." Hawks Aloft, Inc. Albuquerque, New Mexico. October.
- Heil and White 2000 Heil, K.D. and S. White. 2000. *Four Corners Invasive and Poisonous Plant Field Guide*. San Juan College and Bureau of Land Management, Farmington Field Office. Farmington, New Mexico.
- Hershey and Leege 1976 Hershey, T.J., and T.A. Leege. 1976. *Influences of Logging on Elk Summer Range in Northcentral Idaho*. Edited by S.R. Hieb. Proceedings, Elk-Logging-Roads Symposium, Moscow, Idaho. University of Idaho. Moscow, Idaho.
- Hill and Associates 2000 Hill and Associates, Inc. 2000. *Western U.S. Coal Supply Series, Volume II—Western Bituminous Coal Supply, Demand & Prices: 2000-2010*. Annapolis, Maryland. September.
- Honeycutt and Fetterman 1985 Honeycutt, Linda and Jerry Fetterman. 1985. *The Alkali Ridge Cultural Resource Survey and Vandalism Study, Southeastern Utah*. Bureau of Land Management, San Juan Resource Area, Moab Field Office. Moab, Utah.
- Johnson 1994 Johnson, T.H. 1994. *Peregrine Falcon Habitat Management in National Forests of New Mexico*. U.S. Department of Agriculture, Forest Service, Southwest Region. Albuquerque, New Mexico.
- Judge 1973 Judge, W. James. 1973. *PaleoIndian Occupation of the Central Rio Grande Valley in New Mexico*. University of New Mexico Press. Albuquerque, New Mexico.
- Judge 1989 Judge, W. James. 1989. "Chaco Canyon-San Juan Basin." *Dynamics of Southwest Prehistory*. Edited by Linda S. Cordell and George Gummerman. Smithsonian Press. Washington, D.C.
- Julyan 1996 Julyan, Robert. 1996. *The Place Names of New Mexico*. University of New Mexico Press. Albuquerque, New Mexico.
- Kantner 1997 Kantner, John. 1997. "Ancient Roads, Modern Mapping: Evaluating Chaco Anasazi Roadways Using GIS Technology." *Expedition*. Volume 39, Number 3.

- Kantner and Mahoney 2000 Kantner, John, and Nancy M. Mahoney. 2000. *Great Communities Across the Chacoan Landscape*. Anthropological Papers, Number 64. University of Arizona Press. Tucson, Arizona.
- Kaufman 2001 Kaufman, Ken, Caterpillar, Inc. 2001. "Vendor Emission Factor Data for the Cat 3304 Natural Gas-Fired Wellhead Compressor Unit." Personal communication with Chris Crabtree, SAIC. September.
- Kaufman 2002 Kaufman, Ken, Power Systems Associates—a distributor for Caterpillar Inc., engines. 2002. Personal communication with Chris Crabtree, SAIC. October.
- Keck 2001 Keck, David, Director, Public Works, San Juan County. 2001. Personal communication with Susan Goodan, SAIC, Albuquerque, New Mexico. August 3.
- Landes 1970 Landes, Kenneth K. 1970. *Petroleum Geology Of the United States*, Wiley-Interscience.
- Legislative Council Service 2000 Legislative Council Service. 2000. "Tax Revenues Generated by New Mexico from Energy Resources." State of New Mexico, New Mexico Legislature. Santa Fe, New Mexico.
- Lekson 1999 Lekson, Stephen H. 1999. *The Chaco Meridian: Centers of Political Power in the Ancient Southwest*. Altamira Press. Walnut Creek, California.
- Leonard et al. 1992 Leonard, S., G. Staidl, J. Fogg, K. Gebhardt, W. Hagenbuck, D. Pritchard. 1992. *Procedures for Ecological Site Inventory with Special Reference to Riparian-Wetland Sites*. TR-1737-8. Bureau of Land Management. Denver, Colorado.
- Lyon 1983 Lyon, L.J. 1983. "Road Density Models Describing Habitat Effectiveness for Elk." *Journal of Forestry*. Volume 81.
- Malville and Malville 2001 Malville, J. McKim, and Nancy J. Malville. 2001. "Pilgrimage and Periodic Festivals as Processes of Social Integration in Chaco Canyon." *The Kiva*. Volume 66, Number 3.
- Marshall 1997 Marshall, Michael P. 1997. *A Cultural Resource Survey of the NM 44-North Project Area in Sandoval, Rio Arriba, and San Juan Counties, New Mexico*. Report Number 187. Cibola Research Consultants. Corrales, New Mexico.
- Mathien 2001 Mathien, F.J. 2001. "The Organization of Turquoise Production and Consumption by Prehistoric Chacoans." *American Antiquity*. Volume 66, Number 1.
- Mathien and McGuire 1986 Mathien, F.J., and R.H. McGuire. 1986. "External Contact and the Chaco Anasazi." *Ripples in the Chichimec Sea*. Southern Illinois University Press. Carbondale, Illinois.
- McKinley County 2001 McKinley County. 2001. "County Budget Recapitulation, Fiscal Year 07/01/00-06/30/01."
- Millspaugh et al. 2000 Millspaugh, J.J., G.C. Brundige, R.A. Gitzen, and K.J. Raedeke. 2000. "Elk and Hunter Space-Use Sharing in South Dakota." *Journal of Wildlife Management*. Volume 64, Number 4.

- Myrick 1990 Myrick, David F. 1990. *New Mexico's Railroads: A Historical Survey*. University of New Mexico Press. Albuquerque, New Mexico.
- Nelson 1995 Nelson, Ben. 1995. "Complexity, Hierarchy, and Scale: A Controlled Comparison Between Chaco Canyon, New Mexico, and La Quemada, Zacatecas." *American Antiquity*. Volume 60, Number 4.
- Nicholopoulos 2001 Nicholopoulos, Joy E. Field Supervisor, U.S. Fish and Wildlife Service, Ecological Services, Albuquerque, NM. 2001. Letter to Chuck Burt, SAIC. May 30.
- Nickens et al. 1981 Nickens, Paul R., Signa L. Larralde, and Gordon C. Tucker, Jr. 1981. *A Survey of Vandalism to Archaeological Resources in Southwestern Colorado*. Bureau of Land Management. Cultural Resources Series, Number 11. Denver, Colorado.
- Nielsen et al. 2002 Nielsen, J., S. Innis, L. Kass Pollock, H. Rhoads-Weaver, and A. Shutak. 2002. *Renewable Energy Atlas of the West: A Guide to the Region's Resource Potential*. Land and Water Fund of the Rockies. Boulder, Colorado.
- NMAQB 1997 New Mexico Air Quality Bureau. 1997. "New Mexico Air Quality: 1994 through 1996." New Mexico Environment Department. Santa Fe, New Mexico.
- NMAQB 1998 New Mexico Air Quality Bureau. 1998. *New Mexico Air Quality Bureau Dispersion Modeling Guidelines*. New Mexico Environment Department. Santa Fe, New Mexico.
- NMAQB 2000 New Mexico Air Quality Bureau. 2000. Suggested Best Available Control Measures (BACM) for Reducing Windblown Dust from Manmade Sources in Doña Ana County.
- NMAQB 2001a New Mexico Air Quality Bureau. 2001. "Reciprocating Engine Source Test Database: 1990 through 2000 Test Results." New Mexico Environment Department. Santa Fe, New Mexico.
- NMAQB 2001b New Mexico Air Quality Bureau. 2001. "MergeMaster Emission Database." ftp://www.nmenv.state.nm.us/modeling/air_qual/met_data/MMInv2K.zip. New Mexico Environment Department. Santa Fe, New Mexico.
- NMAQB 2002 New Mexico Air Quality Bureau. 2002. "Summary of Farmington Area Daily Maximum 8-Hour Ozone Averages: 1999-2002." New Mexico Environment Department. Santa Fe, New Mexico.
- NM ARMS 2001 New Mexico Archaeological Records Management System. 2001. "Archaeological Site and Survey Data for Farmington Field Office Resource Management Plan/Environmental Impact Statement." New Mexico Office of Cultural Affairs. Santa Fe, New Mexico. March.
- NM Business Journal 1999 *New Mexico Business Journal*. 1999. Volume 23, Number 6. Albuquerque, New Mexico. July.

- NMDFA 2001 New Mexico Department of Finance and Administration. 2001. "Update on State Revenue from Crude Oil and Natural Gas Production." Santa Fe, New Mexico. June.
- NMDL 2000 New Mexico Department of Labor. 2000. "U.S. Department of Housing and Urban Development: Median Family Income." Santa Fe, New Mexico. June.
- NMDT n.d. New Mexico Department of Tourism. No date. Derived from Travel Industry Association's Travel Economic Impact Model (TEIM).
- NMEMNRD 2001 New Mexico Energy, Minerals, and Natural Resources Department. 2001. "New Mexico's Natural Resources: Data and Statistics for 2000." State of New Mexico. Santa Fe, New Mexico.
- NMWQCC 2001 New Mexico Water Quality Control Commission. 2001. "Water Quality And Water Pollution Control In New Mexico ~ 2000, A State Report Required By The U.S. Congress Under §305(b) of the Clean Water Act." *Part II – Surface and Groundwater Quality. Chapter 2 – New Mexico's Surface Water Basins.* New Mexico Environment Department. Santa Fe, New Mexico. February.
- NNMCOG 1999 Northwest New Mexico Council of Governments. 1999. *Draft Northwest New Mexico Comprehensive Economic Development Strategy.* Gallup, New Mexico. September.
- NPS 2000 U.S. Department of the Interior, National Park Service. 2000. GIS Information on the Alignment of the Old Spanish Trail. http://www.nps.gov/gis/metadata/olsp/olsp_spanish_trail.html.
- NRCS 1991 Natural Resources Conservation Service. 1991. "State Soil Geographic (STATSGO) Database, New Mexico Data."
- NRCS 1997 Natural Resources Conservation Service. 1997. *National Soil Survey Handbook.* Handbook 430. Washington, D.C.
- O'Donnell and Clifford n.d. O'Donnell, Kelly, and Thomas Clifford. No date. "Taxation of Coal Production in Western States." Report from the New Mexico Taxation and Revenue Department, and the New Mexico Department of Finance and Administration, available from the New Mexico Legislative Council Service. State of New Mexico, New Mexico Legislature. Santa Fe, New Mexico.
- OEHHA 2002 Office of Environmental Health Hazard Assessment. 2002. "Acute Reference Exposure Levels Summary Table, and Table of Hazard Index Target Organs. http://www.oehha.org/air/acute_rels/relnums.html and http://www.oehha.org/air/chronic_rels/AllChrels.html.
- Olendorff et al. 1981 Olendorff, R.R., A.D. Miller, and R.N. Lehman. 1981. "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1981." *Raptor Research Report.* Number 4. Raptor Research Foundation.
- Olguin 2002 Olguin, Olivia, Rio Arriba County, Treasurer's Office. 2002. Personal communication with Susan Goodan, SAIC, regarding Budget Fund revenues for FY 00/01. February.

- O'Neill 2001 O'Neill, Michael, Paleontologist, Bureau of Land Management, Albuquerque Field Office. 2001. Personal communication with Ellen Dietrich, SAIC. March.
- Paulin et al. 1999 Paulin, K.M., J.J. Cook, and S.R. Dewey. 1999. "Pinyon-Juniper Woodlands as Sources of Avian Diversity." *Proceedings: Ecology and Management of Pinyon-Juniper Communities within the Interior West*. General Technical Report RMRS-P-9. U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. Fort Collins, Colorado.
- Phillips 2000 Phillips, David A. 2000. "The Chaco Meridian: A Skeptical Analysis." Poster session, 65th Annual Meeting, Society for American Archaeology. Philadelphia, Pennsylvania.
- Phippen 2000 Phippen, Stephanie J. 2000. "An Assessment of Land Uses and Other Factors that Affect Sediment Yields in the Rio Puerco Watershed, Sandoval County, New Mexico." Masters Thesis, Colorado State University. Fort Collins, Colorado. Fall.
- Preister 2001 Preister, Kevin. 2001. *Report Number One: Citizen's Issues and Opportunities Related to Bureau of Land Management Activities in the Farmington District Office*. Unpublished report for Bureau of Land Management, Farmington Field Office. Farmington, New Mexico. April.
- PSIAC 1968 Pacific Southwest Inter-Agency Committee. 1968. "Factors Affecting Sediment Yield in the Pacific Southwest Area and Selection and Evaluation of Measures for Reduction of Erosion and Sediment Yield." Report of the Water Management Subcommittee. October.
- Reijnen et al. 1995 Reijnen, R., R. Foppen, C.T. Braak, and J. Thissen. 1995. "The Effects of Car Traffic on Breeding Bird Populations in Woodland. III. Reduction of Density in Relation to the Proximity of Main Roads." *Journal of Applied Ecology*. Volume 32.
- Reijnen et al. 1996 Reijnen, R., R. Foppen, and H. Meeuwsen. 1996. "The Effects of Traffic on the Density of Breeding Birds in Dutch Agricultural Grasslands." *Biological Conservation*. Volume 75.
- Renfrew 2001 Renfrew, Colin. 2001. "Production and Consumption in a Sacred Economy: The Material Correlates of High Devotional Expression at Chaco Canyon." *American Antiquity*. Volume 66, Number 1.
- Reyman 1995 Reyman, J.E. 1995. "Value in Mesoamerican-Southwestern Trade." *Gran Chichimeca: Essays on the Archaeology and Ethnohistory of Northern Mesoamerica*. Avebury/Ashgate Publishing Company. Brookfield, Vermont.
- Reynolds et al. 1992 Reynolds, R.T., R.T. Graham, M.H. Reiser, R.L. Bassett, P.L. Kennedy, D.A. Boyce, G. Goodwin, R. Smith, and E. L. Fisher. 1992. *Management Recommendations for the Northern Goshawk in the Southwestern United States*. General Technical Report RM-217. U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. Fort Collins, Colorado.

- Riley 1996 Riley, Carroll L. 1996. *Rio del Norte: People of the Upper Rio Grande from Earliest Times to the Pueblo Revolt*. University of Utah Press. Salt Lake City, Utah.
- Roney 1992 Roney, John. 1992. "Prehistoric Roads and Regional Integration in the Chacoan System." *Anasazi Regional Organization and the Chaco System*. Edited by D. Doyel. Anthropological Papers, Number 5. Maxwell Museum of Anthropology. Albuquerque New Mexico.
- Rost and Bailey 1979 Rost, G.R. and J.A. Bailey. 1979. "Distribution of Mule Deer and Elk in Relation to Roads." *Journal of Wildlife Management*. Volume 43, Number 3.
- Rowland et al. 2000 Rowland, M.M., M.J. Wisdom, B.K. Johnson, and J.G. Kie. 2000. "Elk Distribution and Modeling in Relation to Roads." *Journal of Wildlife Management*. Volume 64, Number 3.
- SAIC 2002a Science Applications International Corporation. 2002. *Background Information for Some Biological Resources in the San Juan Basin Planning Area*. Unpublished technical report available from the Farmington Field Office. Farmington, New Mexico.
- SAIC 2002b Science Applications International Corporation. 2002. *Cultural Resources Technical Report*. Unpublished report available from the Farmington Field Office. Farmington, New Mexico. May.
- SAIC 2002c Science Applications International Corporation. 2002. *Directional Drilling Technical Report*. Unpublished report available from the Farmington Field Office. Farmington, New Mexico. May.
- SAIC 2003 Science Applications International Corporation. 2003. *Final Air Quality Modeling Analysis Technical Report: Revision to the BLM Farmington Resource Management Plan and Amendment of the Rio Puerco Resource Management Plan*. Unpublished technical report available from the Farmington Field Office. Farmington, New Mexico. January.
- Saitta 1997 Saitta, Dean J. 1997. "Power, Labor, and the Dynamics of Change in Chacoan Political Economy." *American Antiquity*. Volume 62, Number 1.
- Salmerón 1966 Salmerón, Zarate. 1966. *Relaciones*. Horn and Wallace. Albuquerque, New Mexico.
- Sanchez 2001 Sanchez, Ray, Range Conservationist, Bureau of Land Management, Farmington Field Office. 2001. Personal communication with Ellen Dietrich, SAIC. May.
- Sebastian 1992 Sebastian, Lynne. 1992. *The Chaco Anasazi: Sociopolitical Evolution in the Prehistoric Southwest*. Cambridge University Press. Glasgow, England.
- Seymour 1996 Seymour, Deni. 1996. "Archaeological Survey of 2,230 Acres for the Dome Fire Timber Recovery Project, Santa Fe National Forest, Sandoval County, New Mexico." Report Number 1996-10-074. Lone Mountain Archaeological Services. Albuquerque, New Mexico.

- Silva 2001 Silva, T., Biologist, Bureau of Land Management, Albuquerque Field Office, Albuquerque New Mexico. 2001. Personnel communication with Chuck Burt, SAIC. April 27.
- Snygg and Windes 1998 Snygg, John, and Tom Windes. 1998. "Long, Wide Roads and Great Kiva Roofs." *The Kiva*. Volume 64, Number 1.
- Sofaer 1997 Sofaer, A. 1997. "The Primary Architecture of the Chaco Canyon." *Anasazi Architecture and the American Design*. Edited by B. Morrow and V.B. Price. University of New Mexico Press. Albuquerque, New Mexico.
- Stein and Lekson 1992 Stein, John, and Steve Lekson. 1992. "Anasazi Ritual Landscapes." *Anasazi Regional Organization and the Chaco System*. Edited by D. Doyel. Maxwell Museum of Anthropology. Albuquerque, New Mexico.
- Stuart and Gauthier 1981 Stuart, David E. and Rory P. Gauthier. 1981. *Prehistoric New Mexico: Background for Survey*. University of New Mexico Press. Albuquerque, New Mexico.
- Swadesh 1974 Swadesh, Frances Leon. 1974. *Los Primeros Pobladores: Hispanic Americans of the Ute Frontier*. University of Notre Dame Press. South Bend, Indiana.
- Toll 2001 Toll, H. Wolcott. 2001. "Making and Breaking Pots in the Chaco World." *American Antiquity*. Volume 66, Number 1.
- Trombulak and Frissell 2000 Trombulak, S.C. and C.A. Frissell. 2000. "Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities." *Conservation Biology*. Volume 14, Number 1.
- Uhl 2001 Uhl, Mary, Program Manager, Air Quality Bureau, New Mexico Environment Department. 2001. Personal communication with Chris Crabtree, SAIC. September.
- UNESCO 1987 United Nations Educational, Scientific, and Cultural Organization. 1987. "Chaco Culture National Historical Park." <http://www.unesco.org/whc/sites/353.htm>.
- UNM BBER 2000 University of New Mexico, Bureau of Business and Economic Research. 2000. "Population Statistics for New Mexico by County." Albuquerque, New Mexico. July 1.
- Unsworth et al. 1998 Unsworth, J.W., L. Kuck, E.O. Garton, and B.R. Butterfield. 1998. "Elk Habitat Selection on the Clearwater National Forest." *Journal of Wildlife Management*. Volume 62, Number 4.
- US Army 1987 U.S. Army. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1. Waterways Experiment Station. Vicksburg, Mississippi. <http://www.wes.army.mil/el/wetlands/pdfs/wlman87.pdf>. January.
- US Census 1999 U.S. Census Bureau. 1999. "Small Area Income and Poverty Estimates Program." <http://www.census.gov/hhes/www/saie.html>. February.
- US Census 2000 U.S. Census Bureau. 2000. "Population by City and County, New Mexico." <http://www.census.gov/census2000/states/nm.html>.

- USBR 1999 U.S. Department of the Interior, Bureau of Reclamation. 1999. *Draft Navajo Reservoir Resource Management Plan*. Unpublished report. Durango, Colorado. May.
- USDA 1999 U.S. Department of Agriculture, National Agricultural Statistics Services. 1999. "1999 New Mexico Agricultural Statistics." <http://www.nass.usda.gov/nm/>.
- USDI 1989 U.S. Department of the Interior, Bureau of Land Management, and U.S. Department of Agriculture, Forest Service. 1989. "Gold Book." *Surface Operating Standards for Oil and Gas Exploration and Development*. BLM/USFS Rocky Mountain Regional Coordinating Committee. January.
- USDI 2001a U.S. Department of the Interior, Bureau of Land Management, and U.S. Geological Survey. 2001. *Biological Soil Crusts: Ecology and Management*. Technical Reference 1730-2. <http://www.id.blm.gov/publications/crust/part1.pdf>. Denver, Colorado.
- USDI 2001b U.S. Department of the Interior, Minerals Management Service, Minerals Revenues Management. 2001. "Federal Mineral Revenue Dispersements by County of Origin, FY 2000, New Mexico—Onshore."
- USEPA 1990 U.S. Environmental Protection Agency. 1990. "Superfund National Oil and Hazardous Substances Pollution Contingency Plan." Final Rule, 40 CFR 300.
- USEPA 1993 U.S. Environmental Protection Agency. 1993. "Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure." Preliminary Review Draft. Washington, D.C.
- USEPA 1997a U.S. Environmental Protection Agency. 1997. "National Air Toxics Information Clearinghouse (NATICH) Database." Office of Air Quality Planning and Standards. <http://ttnwww.rtpnc.epa.gov/html/natich/natich.html#NA7>. Research Triangle Park, North Carolina.
- USEPA 1997b U.S. Environmental Protection Agency. 1997. "Integrated Risk Information System Database." Office of Air Quality Planning and Standards. <http://www.epa.gov/ngispgm3/iris/index.html>. Research Triangle Park, North Carolina.
- USEPA 1998 U.S. Environmental Protection Agency. 1998. "Residential Furnaces." *Compilation of Air Pollutant Emission Factors, AP-42, Volume I*.
- USEPA 2000 U.S. Environmental Protection Agency. 2000. *Compilation of Air Pollutant Emission Factors*. AP-42, Volume I, Section 3.2.
- USEPA 2001a U.S. Environmental Protection Agency. 2001. "EPA AIRData Monitor Values Report." <http://www.epa.gov/air/data/monvals.html>.
- USEPA 2001b U.S. Environmental Protection Agency. 2001. "EPA AIRData National Emission Trends (NET) Source Reports." <http://www.epa.gov/air/data/net.html>.
- USEPA 2001c U.S. Environmental Protection Agency. 2001. "Locate Your Watershed." *Surf Your Watershed*. <http://www.epa.gov/surf3/locate/>.

- USEPA 2002a U.S. Environmental Protection Agency. 2002. "Fact Sheet: Final Response to Court Remand of National Ambient Air Quality Standards for Ozone to Address 'Beneficial' Aspects of Ground-Level Ozone." December 18. <http://www.epa.gov/airlinks/uvb-fs.pdf>.
- USEPA 2002b U.S. Environmental Protection Agency. 2002. "EPA AIRData." <http://www.epa.gov/air/data/index.html>.
- USEPA 2002c U.S. Environmental Protection Agency. 2002. "Mesa Verde National Park and Weminuche Wilderness: Pollutants that Contributed to Reduce Visibility on the Worst Days in 1997." http://www.epa.gov/air/vis/meve_p.html and http://www.epa.gov/air/vis/wemi_p.html.
- USFS 1996 U.S. Department of Agriculture, Forest Service. 1996. *Mexican Spotted Owl Inventory Protocol*. Southwest Region. Albuquerque, New Mexico.
- USFS 2000 U.S. Department of Agriculture, Forest Service. 2000. "Mexican Spotted Owl Survey Data for 1990 through 2000." Jicarilla Range District. Bloomfield, New Mexico.
- USFWS 1995 U.S. Fish and Wildlife Service. 1995. *Mexican Spotted Owl Recovery Plan*. Albuquerque, New Mexico.
- USFWS 2001 U.S. Fish and Wildlife Service. 2001. "Endangered and Threatened Wildlife and Plants: Final Designation of Critical Habitat for the Mexican Spotted Owl." *Federal Register*: Volume 66, Number 22. February.
- USGS 2001a U.S. Geological Survey. 2001. "Groundwater Atlas of the United States—Arizona, Colorado, New Mexico, Utah: HA 730-C. Colorado Plateau Aquifer." http://sr6capp.er.usgs.gov/gwa/ch_c/C-text8.html.
- USGS 2001b U.S. Geological Survey. 2001. "Groundwater Atlas of the United States—Arizona, Colorado, New Mexico, Utah: HA 730-C. Rio Grande Aquifer System." http://sr6capp.er.usgs.gov/gwa/ch_c/C-text4.html.
- Van Dyke et al. 1986 Van Dyke, F.G., R.H. Brocke, and H.G. Shaw. 1986. "Use of Road Track Counts as Indices of Mountain Lion Presence." *Journal of Wildlife Management*. Volume 50, Number 1.
- Vivian 1990 Vivian, R. Gwinn. 1990. *The Chacoan Prehistory of the San Juan Basin*. Academic Press. New York, New York.
- Vivian 1997a Vivian, R. Gwinn. 1997. "Chacoan Roads: Morphology." *The Kiva*. Volume 63, Number 1.
- Vivian 1997b Vivian, R. Gwinn. 1997. "Chacoan Roads: Function." *The Kiva*. Volume 63, Number 1.
- Wagner Power Systems 2002 Wagner Power Systems. 2002. Personal communication (fax) with Bonnie Carson, SAIC. March.
- Ward 1976 Ward, A.L. 1976. *Effects of Highway Construction and Use on Big Game Populations*. Report No. FHWA-RD-76-174. Federal Highway Administration, Office of Research & Development. Washington, D.C.

- Williams 1986 Williams, Jerry L. 1986. *New Mexico in Maps*. University of New Mexico Press. Albuquerque, New Mexico.
- Wilcox 1994 Wilcox, David R. 1994. "The Scream of the Butterfly: Competition and Conflict in the Prehistoric Southwest." *Themes in Southwest Prehistory*. Edited by George J. Gummerman. School of American Research. Santa Fe, New Mexico.
- Windes and Ford 1996 Windes, Thomas C., and Dabney Ford. 1996. "The Chaco Wood Project: The Chronometric Reappraisal of Pueblo Bonito." *American Antiquity*. Volume 61.
- Winship 1990 Winship, George Parker. 1990. *The Journey of Coronado, 1540-1542*. Fulcrum Publishing. Golden, Colorado.
- Winter et al. 1993 Winter, Joseph C., Karen Ritts-Benally, and Orit Tamir. 1993. *Across the Colorado Plateau: Anthropological Studies for the Transwestern Pipeline Expansion Project, VIII*. University of New Mexico, Office of Contract Archeology. Albuquerque, New Mexico.
- Wirth 2001 Wirth, Dale. 2001. "Annual Report on Data Collection for 2000 Concerning Suspected Contributions of Polynuclear Aromatic Hydrocarbons by Oil and Gas Leasing on Public Lands in the San Juan Basin, New Mexico." Bureau of Land Management, Farmington Field Office. Farmington, New Mexico.
- Wirth 2002 Wirth, Dale. 2002. "Annual Report on Data Collection for 2001 Concerning Suspected Contributions of Polynuclear Aromatic Hydrocarbons by Oil and Gas Leasing on Public Lands in the San Juan Basin, New Mexico." Bureau of Land Management, Farmington Field Office. Farmington, New Mexico.
- WRCC 2001 Western Regional Climate Center. 2001. "Period of Record Monthly Climate Summary for Farmington Agricultural Science Center, New Mexico, Station 293142. Period of Record: 5/1/1978 to 7/31/2000." <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nmfarm>.
- WUG 1992 Western Utility Group. *Western Regional Corridor Study*. 1992. Sierra Pacific Power Company. Reno, Nevada.
- WUG 2002 Western Utility Group. 2002. "Priority Corridors with National Landscape Conservation System Data." BLM Update of the WUG Western Regional Corridor Study of 1993. September.

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